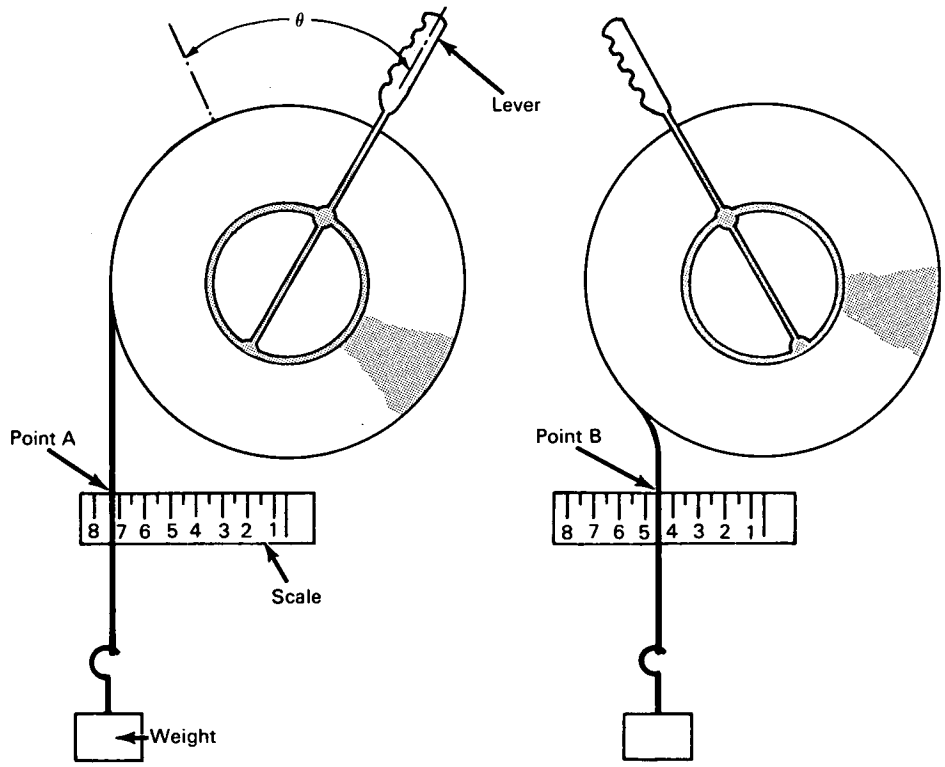
October 1967

Brief 67-10417

NASA TECH BRIEF

Technique for Measuring Magnetic Tape Interlayer Adhesion



The problem:

To predict the interlayer adhesion factor in spacecraft data storage tape in order to avoid "blocking" due to long term dormancy or to decreased tape transport drive power.

The solution:

A technique that measures the peel-off force necessary to unspool tape. An unwind force is exerted on the spool over an angle and the displacement before breakaway of the weighted outer layer from the tangential position is used to calculate the force by means of a derived formula.

How it's done:

As the tape roll is about to be turned by the lever, the outer tape layer, acted on by the weight, crosses the scale at point A. As the lever is moved through angle θ, the tape moves laterally to point B on the scale before it breaks away from the tape roll to again assume the tangential position (point A). The distance traversed by the tape between points A and B is a function of the degree of adhesion between the tape layers.

(continued overleaf)

Notes:

1. While the instant technique was designed in response to a space-related problem, it could find use in design of equipment and in storage criteria for terrestrial applications.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   NASA Pasadena Office
   4800 Oak Grove Drive
   Pasadena, California 91103
   Reference: B67-10417

Patent status:

No patent action is contemplated by NASA.

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(NPO-10011)